AN EFFICIENT METHOD TO TRANSFER FILES IN PEER-TO-PEER NETWORKS OVER VIDEO ON DEMAND SERVICES

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Abstract

One of the most promising technology is Peer-to- Peer. Each peer acts as a client and server so every peer is accounted for the downloading and uploading of files. Though frequently compared to client server model it is altogether distinct to it. Therefore it is also known as single system program so at that instance each peer can act as client/server. Content distribution or file sharing or dissemination of information of the file is one of the most important application. Besides this, the other applications include publications and dissemination of software, content delivery network, streaming media and multicast streaming. It also allows on demand content delivery. Science networking, searching and communication are other applications of peer to peer.

Keywords: P2P Network, Client server Model, Hybrid Model, Searching Communication

I. INTRODUCTION

The concept of Peer-to-Peer file sharing technology is growing at an unprecedented rate. Each peer can perform like both client and server and that sets them a part from the client server model. File can be shared depending upon the bandwidth and the peer possessing larger bandwidth is given the precedence followed by the other. Suppose the key server is sharing the file to client and another peer requests for file sharing, the key server will put together an arrangement for the requested peer. And the client receiving the file at this time will transfer the file to the client which is making the request. In this scenario it is free for anyone to operate as a client and server. Therefore the amount of the file transferred will be larger and at a higher speed. It comes handy for downloading a video file from the net. The files can be shared by utilizing the techniques such as MCC, FIFO, LFU, and LRU. When a file wishes to share from the server, it will apparently look for the peer which possess a higher bandwidth[15].

Peers with similar bandwidth experiences LFU (low frequently used). So the peer which is not used frequently will receive the file. In peer to peer the files are stored in the cache memory in the server. When the cache memory is completely occupied it will then erase the files on the basis of first in first out(FIFO).The file which is deleted first will be the one which was first in. It is the responsibility of the cache to locate the client having the necessary file. This memory enables the files to be transferred between peer to peer. The capacity of the cache memory is up to 1024mb equivalent to 1kb.It will follow the following technique when the cache is completely occupied. Peer to peer enables many users to work simultaneously. Therefore it is considered as the best file sharing network. Depending on the bandwidth, the peers will be separated as clusters [2] with each cluster consisting a definite bandwidth.

For example cluster1 contains 1mbps bandwidth, cluster 2 contains 2mbps and similarly each clusters comprises of different bandwidth. Within each cluster many peers will be separated wherein every peer will possess similar bandwidth. In this peer to peer, all the peers will be linked in corresponding manner [1], [8]. There is no restriction as who should act

as a client and who should be a server. This property enables to not only share video file but even some digital files and some computer files, books, movies, music and games. This particular P2P software enables to look for client at nearest proximity in the P2P network and conveys the file. The Fig.1 shows the client Server Model and peers(nodes) ofP2Pnetworkwillbeend user computer system interconnected between the internets. Scientist Gnutella and kazaa were the first to develop this new P2P file sharing method.

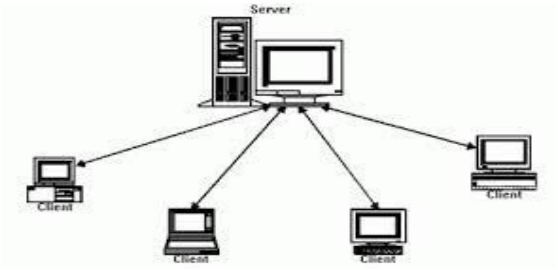

Fig 1: Client Server Model

II. RELATEDWORK

In the year 1999, the earlier peer to peer file sharing method was developed by NAPSTER. Following the death of NAPSTER, gnutella and kazaa developed the new peer to peer file sharing network [7] . The old Peer to Peer file sharing was based on the central server system and enabled sharing of only music files effectively. Following extensive research, the system has developed to a great extent and any kind of files can be transferred utilizing this peer to peer file sharing technique. Unlike the client server model, this method is connected parallel and is known as decentralized and dispersed design [3][1].

A. Mentioned below are the two types inP2P

Thestructuredp2pisorganized by some definite standard and some algorithms. Some of the real time examples of structured P2P are some of the network computer workstations [5]. Unstructured P2P computer architecture consists of three types of models as follows: It is a democratization of every peer group nodes. They are two forms in order to accomplish the route:

One of the probable structuring is direct messaging. It is communicated through peer group members until an object of the member group is found. Further it must establish the members in HORIZON group. Horizon means limit of visibility from the node generating the query.

Another probable way for attaining the routing structure is distributed catalog. It necessities an energetically balanced catalog because it is indexed as parameter and searches as distributed catalog. This may also be not very efficient but it is very safe to work.

It is very necessary to enhance the P2P models in order to improve the search potential and system performance. Data accumulation in Peer-to-Peer is enormous. So in order to address these issues, this paper presents the application of data mining technology to P2P network. Based on SWLDRM, few developments are considered and nodes are clustered depending on the characters of object stored by K-NN algorithm. Simulation result proves that K-chord is more efficient in terms of performance and search when compared to SWLDRM [9].

One of the extensive classification of community based P2P systems is presented in this paper. Users belonging to a definite network forms this community. And the augmentation of these communities is influenced by factors such as value of the content, projection for enhanced performance and user experience enhancement. A campus network and a national ISP located in diverse continents are the two distinct environments that this study focuses. Here, the key P2P systems are found to be large scale closed communities. Results confirm that traffic on Internet peering links are reduced by localizing traffic inside ISP boundaries [10].

It is becoming increasingly challenging for ISPs because of the unprecedented growth of P2P applications consuming humongous bandwidth resources. So, it is paramount to handle P2P traffic efficiently and simultaneously protecting the P2P user interest. This paper primarily focus on analyzing current mainstream P2P optimization strategies and implement NRDA technology. This technology permits ISPs to manage P2P traffic efficiently and independently on certain links and also to respond quickly in case of an abrupt necessity of resources. By and large, the planning of network resources are executed by the NRDA and it also offers resource planning capability to the

ISPs[11].

In today's internet world, ISPs are facing an uphill task of providing basic network services for P2P users and also to effectively manage network bandwidth usage. But, existing strategies fail to fulfill these requirements. This paper proposes to devise a plain and efficient system for ISPs to strike a balance between service and network management. This can be attained by suggesting a file-aware P2Ptraffic classification method which can identify files and the associated flows. Two alternatives are proposed. One is by limiting the per- file bandwidth consumption and the other by measuring a real-life trace from peers and files perspective. The results show that as per the actual demands, ISPs can expediently choose suitable traffic management parameters[12].

Most of the video streaming services are developed for wired networks. But the challenge is to stream it in wireless environment which demands several alterations. Through an logical representation, this paper proposes a performance evaluation model of the traffic behavior which bears a resemblance to the network interactions during a video transmission. In wireless environment, when the number of nodes increases the quality of video degrades due to collisions. Therefore, P2P-TV applications should be integrated from lower layers to meet the level of quality requirements. The throughput parameter is determined by this model and the network performance is evaluated precisely[13].

There should be monitoring of the Service Level Objectives in order to meet the Service Level

Agreements (SLAs) and regulate vital network services. However, the probing techniques are expensive and are also labor-intensive and prone to error. So, Peer-to-Peer (P2P) technology is employed to improve the detection of SLA breach. A P2P management overlay is considered to coordinate the probe activation and share measurement results between the network devices. In large scale networks, an autonomic P2P solution is proposed to coordinate active measurement probes. The solution is proved to be feasible as per the simulation results[14].

B. CentralizedP2P

It consists of a central look up server linked in a star network style. In this type of peer to peer model, the message can be sent with ease and with greater speed because of less traffic. Because of the fact that it has less traffic it can be quickly addressed. But bottleneck behavior which is a single point of failure is the biggest drawback. Though addressing is very efficient it is not safe to work. The Fig.2 shows the centralized P2P[4].

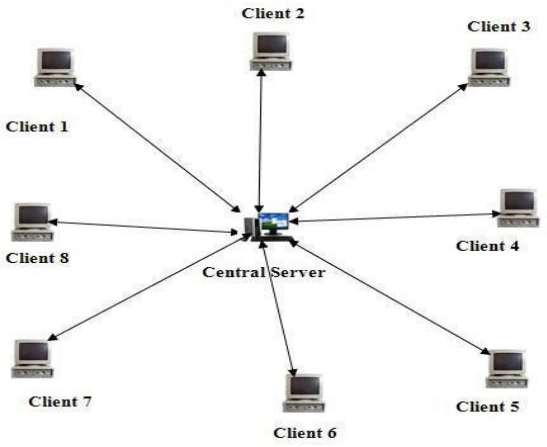

Fig.2: Centralized P2P

C. Hybrid P2P

It is an overlay routing structure consisting of super peers and leaf nodes. Hence leaf nodes are connected in star network and super peers act as shield to the leaf nodes [8]. Addressing is partly efficient and it is not safe.

Furnished below are few of the benefits of the peer to peer network:

a. Operating system is not needed in this network.

b. Unlike the client server model, a specialized complex network setup is not required. It can be created with ease and does not demand any superior knowledge.

c. Server is not so pricey because of the fact that an individual client can act as a server when uploading a file to another user.

d. If one of the peers does not succeed in sharing, it will not disturb any other part of the network. It would be just occupied with another work of sharing and will remain unavailable to other peers.

e. Compared to the client server model, the file sharing will be at a higher speed.

f. Easy availability and reduced cost is another big benefit of peer to peer network. So it enables users to utilize it in low cost.

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g. Peer to peer has well tested peers ,it will not have the peers which is not ready to share the file among another peer i.e. well tested simplicity.
h. It doesn't require a dedicated server. Anyone can act as server and anyone can act as client, so any computer can access both server and workstation.

D. Problems of P2P networking

Some of the potential problems faced by the users with Peer to Peer software are Bandwidth utilization, copyright infringement, and security issues. It also face some troubleshooting network problem, A computer may fail to process for many reasons this one of the basic reason for the problems in P2p networking. If it is not working problem it will affect the entire home networking to stop functioning.TheFig.3illustratedthemodeldiagram of P2PNetworks.

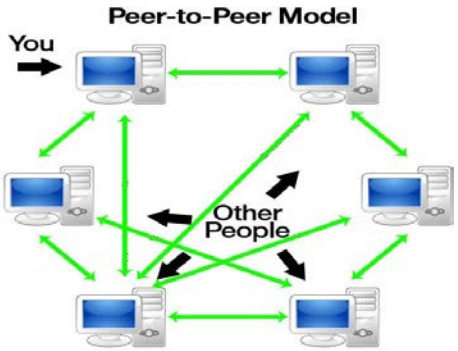

Fig.3: Model diagram of P2P networks

III. PROPOSED MODEL FOR P2PSYSTEMS

A. Core Transfer Engine Layer

The requested files between peers is transferred by this layer and it also carry out all the responsibilities of Peer actions. In this particular project, we anticipate to see some codes around Peers. This part is the heart of this system. When a peer commences its work, the first task is to register itself as a peer. Subsequently it should play the part of both server and client[6]Later ,if any peer asks a file, first it should search the file and after receiving the file's information such as the destination peer host name, it should utilize that information to connect to the peers and then download the file. The PNRP Manager (Peer Name Resolution Protocol) class is responsible to Register and Resolve peers.

```
Sealed class File Transfer Service Host
{
   Public void Do Host(List<Peer Info> peers)
   {
      Uri [] Uris = new Uri [peers. Count];

      String Address = string. Empty;
      For (inti = 0; i<peers. Count; i++)
      {
         Address = string. Format("net.tcp://{0}:{1
}/Transfer Engine", peers[i].Host
Name, peers[i].Port);
         Uris[i] = new Uri(Address);
      }

File Transfer Service Class current
Peer Service Proxy = new File
Transfer Service Class(); Service Host
_service Host =new
Service Host(current Peer Service Proxy,
Uris); Net Tcp Binding tcp Binding =new
          Net Tcp Binding (Security Mode.None); }
}
Interface IFile Transfer Service
{
   [Operation Contract Attribute(Is One Way = false)]
byte[] Transfer File B yHash (string file Name ,string
hash, long part Number);

   [Operation Contract Attribute(Is One Way = false)]
byte[] Transfer File(string file Name, long part
Number);
}
```

IV CONCLUSION

One of the most promising technology in the internet world is the P2P network. After the multi- core processor is developed the P2P network will achieve unprecedented worth in the web. This study is a complete survey paper providing details about P2P networks. My survey provides types of P2P computing algorithms. Currently every field depends on computer and its various application. Therefore it is highly essential to design state-of-art P2P systems for video on demand service.

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